

FERMENTED MILK PRODUCT

FIELD OF THE INVENTION

[0001] The present invention relates to a composition comprising lactic acid bacteria and a process for manufacturing fermented dairy products using said composition.

BACKGROUND OF THE INVENTION

[0002] The food industry uses different bacteria, in the form in particular of ferments, in particular lactic acid bacteria, in order to improve the taste and the texture of foods but also to extend the shelf life of these foods. In the case of the dairy industry, lactic acid bacteria are used intensively in order to bring about the acidification of milk (by fermentation) but also in order to texturize the product into which they are incorporated. Among the lactic acid bacteria used in the food industry, there can be mentioned the genera *Streptococcus* and *Lactobacillus*. The lactic acid bacterial species *Streptococcus thermophilus* and *Lactobacillus delbrueckii* ssp. *bulgaricus* are used in particular in the formulation of the ferments used for the production of fermented milks, for example yogurts.

[0003] The acidity produced in yogurt depends mainly on the acidifying activity of the yogurt culture (*Streptococcus thermophilus* and *Lactobacillus delbrueckii* ssp. *bulgaricus*) and therefore the amount of lactic acid produced during the milk maturation and also the residual acidity produced during cold storage. The texture is also varying during storage and participates in the final product sensorial properties. The recipe of the yogurt has also an impact on the yogurt sensorial properties by modifying the texture or the aroma perception.

[0004] Fermented milk products such as yogurts, are often fortified with extra protein in order to increase the thickness of the products. Proteins mostly used for this purpose are milk protein sources such as caseinates, whey protein isolates and skim milk powder. Protein prices are increasing because of increasing demand. This is also true for milk proteins. Fortification of fermented milk products with milk proteins is thus becoming more expensive. As a result dairy companies are looking for opportunities to reduce the milk protein content that is used for fortification of the fermented milk products.

[0005] Reduction of milk protein content in fermented milk products comes at a cost. Milk proteins are key in generating a certain protein gel strength within the dairy product. Reduction of the protein content thus leads to reduction of the gel strength, and as a result the thickness of the yogurt in sensory perception is reduced. This is undesirable and puts a strong restriction on the extent with which the protein content can be reduced in fermented milk products. The solution for reduction of the protein content is to find a means to compensate for the loss in gel strength. There are several methods known to the person skilled in the art, such as introduction of texturizing agents. Texturizing agents, such as stabilizers and gelatine can be used to reduce the amount of milk protein added. While the use of texturizing agents, such as stabilizers, in yogurt can be more cost effective than milk protein addition, their use is restricted by regulation and labeling laws. For example, in Canada texturizing agents may not be added to more than 2% w/w of the final product. Also, in the EU hydrocolloids are assigned an "E number" which may be unappealing to the consumer.

In addition, enzymatic treatment, such as transglutaminase [Lauber et al., 2000; Chr Lorenzen et al., 2002] or heat treatment regimens [Lauber et al., 2001] may be applied to compensate for the loss in gel strength.

[0006] The inventors have now surprisingly found a new method to compensate for the loss in gel strength by using a starter culture composition. The cultures of the invention have the ability to increase the gel strength and/or the serum viscosity thereby improving the texture of a fermented milk product with reduced protein to compensate (partly) for the loss in thickness and creaminess of the fermented milk product.

Definitions

[0007] The term "milk" is intended to encompass milks from mammals and plant sources or mixtures thereof. Preferably, the milk is from a mammal source. Mammal sources of milk include, but are not limited to cow, sheep, goat, buffalo, camel, llama, mare and deer. In an embodiment, the milk is from a mammal selected from the group consisting of cow, sheep, goat, buffalo, camel, llama, mare and deer, and combinations thereof. Plant sources of milk include, but are not limited to, milk extracted from soy bean, pea, peanut, barley, rice, oat, quinoa, almond, cashew, coconut, hazelnut, hemp, sesame seed and sunflower seed. In addition, the term "milk" refers to not only whole milk, but also skim milk or any liquid component derived thereof.

[0008] As used in the present specification, the term "fermented milk product" refers to a product that has been fermented with lactic acid bacteria such as *Streptococcus thermophilus* and optionally *Lactobacillus delbrueckii* subsp. *bulgaricus*, but also, optionally, other microorganisms such as *Lactobacillus delbrueckii* subsp. *lactis*, *Bifidobacterium animalis* subsp. *lactis*, *Lactococcus lactis*, *Lactobacillus acidophilus* and *Lactobacillus casei*, or any microorganism derived therefrom. The lactic acid strains other than *Streptococcus thermophilus* and *Lactobacillus delbrueckii* subsp. *bulgaricus*, are intended to give the finished product various properties, such as the property of promoting the equilibrium of the flora. The fermentation process increases the shelf-life of the product while enhancing and improving the digestibility of milk. Many different types of fermented milk products can be found in the world today. Examples are soured milk (e.g. buttermilk), soured cream and yogurt.

[0009] As used herein, the term "yogurt" is a fermented milk product produced by fermentation of milk by lactic acid bacteria, also known as "yogurt cultures". The fermentation of the lactose in the milk produces lactic acid which acts on the milk protein to give the yogurt its texture. Yogurt may be made from cow milk, the protein of which mainly comprises casein, which is most commonly used to make yogurt, but milk from sheep, goat, buffalo, camel, llama, mare, deer, water buffalo, ewes and/or mares, and combinations thereof may be used as well. The term "yogurt" furthermore encompasses, but is not limited to, yogurt as defined according to French and European regulations, e.g. coagulated dairy products obtained by lactic acid fermentation by means of specific thermophilic lactic acid bacteria only (i.e. *Lactobacillus delbrueckii* subsp. *bulgaricus* and *Streptococcus thermophilus*) which are cultured simultaneously and are found to be living in the final product in an amount of at least 10 million CFU (colony-forming unit) per gram of the yogurt. Preferably, the yogurt is not heat-treated after fermentation. Yogurts may optionally contain added